

ABSTRACT OF THE DISCLOSURE

Between adjacent MEA's is a bipolar plate assembly having a first sub-plate with a flow channel which is open to the anode side of the one of the MEA's. A second sub-plate has a flow channel which is open to the cathode side of the adjacent MEA. The sub-plates are nested together to form a coolant flow channel between the sub-plates. The coolant flow path has a height dimension wherein the distance between the adjacent MEA's is substantially unaffected by the height dimension of the coolant flow path. A method of manufacturing a bipolar plate assembly includes forming a closed coolant flow channel between the sub-plates by nesting the sub-plates together. A method of operating a fuel cell includes passing the coolant through a flow path having a height dimension which is substantially aligned with the height dimension of the hydrogen flow path, the oxygen flow path, or both.